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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/684,401

10/10/2000

Timothy R. Miller

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11/02/2004

POSZ & BETHARDS, PLC  
11250 ROGER BACON DRIVE  
SUITE 10  
RESTON, VA 20190

EXAMINER

BURD, KEVIN MICHAEL

ART UNIT

PAPER NUMBER

2631

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/684,401

Applicant(s)

MILLER, TIMOTHY R.

Examiner

Kevin M. Burd

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-88 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-88 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/04</u> . | 6) <input type="checkbox"/> Other: _____  |

1. This office action, in response to the remarks filed 7/21/2004, is a non-final office action.

***Response to Arguments***

2. Applicant's arguments, see remarks, filed 7/21/2004, with respect to the rejections of claims 1-88 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Fullerton et al (US 6,763,057).

***Information Disclosure Statement***

3. The information disclosure statement filed 5/27/2004 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because a number of references are non-published patent applications and not prior art. In addition, a number of the references are not prior art due to their filing date. These references have not been considered. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-6, 12-25, 31-49, 55-77 and 83-88 are rejected under 35 U.S.C. 102(e) as being anticipated by Fullerton et al (US 6,763,057).

Regarding claims 1-3, 20-22 and 36, Fullerton discloses a method and apparatus for communication via wideband impulse radio. Figure 1b discloses receiving a wideband signal at the antenna 704 (column 4, line 61 to column 5, line 15). A receiver signal is generated at the receiver (730). The received signal is correlated at 7-10 "in light of" the receiver signal 730 and a correlated signal 712 is output. The correlated signal is compared to a threshold to determine if lock has occurred in phase lock loop 742 (column 4, lines 63-65). The receiver signal's phase will be shifted or changed to match the timing of signal 730 to the timing of the incoming signal 708 (column 5, lines 10-13).

Regarding claims 4, 5, 23 and 24, Fullerton discloses the output of the correlator 7-10 will optimize the signal to noise ratio (column 4, lines 58-60). This optimization will optimize the errors present in the transmission as well.

Regarding claims 6 and 25, Fullerton discloses the output of the cross correlation is input to the PLL. This signal is to be matched with a feedback signal. If a match occurs, then phase lock has been achieved.

Regarding claims 12 and 31, m-ary modulation schemes are disclosed (column 6, lines 23-34).

Regarding claims 13 and 32, the incoming signals will comprise at least two levels.

Regarding claims 14-19, 33 and 35, Fullerton discloses the process of phase locking will be updated continuously. If the PLL is not locked, the feedback signal will change.

Regarding claims 37-43, 46, 61, 65-74 and 85-88, Fullerton discloses a method and apparatus for communication via wideband impulse radio. Figure 1b discloses receiving a wideband signal at the antenna 704 (column 4, line 61 to column 5, line 15). A receiver signal is generated at the receiver (730). The received signal is correlated at 7-10 "in light of" the receiver signal 730 and a correlated signal 712 is output. The correlated signal is compared to a threshold to determine if lock has occurred in phase lock loop 742 (column 4, lines 63-65). The receiver signal's phase will be shifted or changed to match the timing of signal 730 to the timing of the incoming signal 708 (column 5, lines 10-13). The phase will be altered for a value of less than 360 degrees since 360 degrees equals zero degrees and no phase adjustment is necessary.

Regarding claims 44, 45, 57-60, 62 and 63, Fullerton discloses the process of phase locking will be updated continuously. If the PLL is not locked, the feedback signal will change.

Regarding claims 47, 48, 64, 75 and 76, Fullerton discloses the output of the correlator 7-10 will optimize the signal to noise ratio (column 4, lines 58-60). This optimization will optimize the errors present in the transmission as well.

Regarding claims 49 and 77, Fullerton discloses the output of the cross correlation is input to the PLL. This signal is to be matched with a feedback signal. If a match occurs, then phase lock has been achieved.

Regarding claims 55 and 83, m-ary modulation schemes are disclosed (column 6, lines 23-34).

Regarding claims 56 and 84, the incoming signals will comprise at least two levels.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7-11, 26-30, 50-54 and 78-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fullerton et al (US 6,763,057) in view of Fontana et al (US 6,239,741).

Regarding claims 7, 26, 50 and 78, Fullerton discloses the communication apparatus and method stated above in paragraph 4. The combination does not disclose amplifying the received signal to produce an amplified received signal. Fontana discloses amplifying the received signal to produce an amplified received signal. By amplifying the received signal, the UWB pulses are amplified to levels suitable for use by the high sensitivity pulse detector circuitry downstream of the receiver (column 3, lines 15-18). It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the amplifying components and the method of amplifying disclosed by Fontana in the receiver of Fullerton for the reason stated above.

Regarding claims 8, 11, 27, 30, 51 54, 79 and 82, the correlation step will determine the maximum peak of the correlation signal with the amplified signal as an input.

Regarding claims 9, 10, 28, 29, 52, 53, 80 and 81, the noise and bit error rate will not change once the signal has been amplified.

6. Claims 18 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fullerton et al (US 6,763,057) in view of Rizzo et al (US 5,841,808).

Regarding claims 18 and 62, Fullerton discloses the communication apparatus and method stated above in paragraph 4. The combination does not disclose determining a lock parameter indicative of an average noise value. Rizzo discloses calculating an average noise value of the environment from a threshold detector and determining if the incoming signal is properly phased (column 5, lines (16-20). This is

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done in correlation circuitry to make sure the correlation is locked to the correct value (column 5, lines 5-10). It would have been obvious for one of ordinary skill in the art at the time of the invention to use the average noise detector to ensure the correlation is locked properly to the correct value. Otherwise, false locks can occur and incorrect data will be processed.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. McCrokie et al (US 2003/0053554) discloses an UW communication system that correlates the received signal during a signal acquisition mode.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Thursday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kevin M. Burd

10/30/2004

**KEVIN BURD  
PATENT EXAMINER**